

WHAT IS CLAIMED

1. A method of conducting wireless packetized digital data communications between a data sourcing site and a data reception site, geographically remote with respect to one another, said method comprising the steps
5 of:

(a) providing a communication path between said data sourcing site and said data reception site, said communication path including at least one relay therebetween, such that said communication path contains
10 at least three successive transceiver devices, wherein each pair of immediately successive transceiver devices includes a data transmission device and a data reception device;

(b) selectively wirelessly transmitting a polling
15 message to said data transmission device from said data reception device;

(c) in response to receipt of said polling message, wirelessly transmitting, from said data transmission device to said data reception device, a
20 poll acknowledgement message that is representative of whether said data transmission device has data to send and the quantity of data to be sent;

(d) in response to receipt of said poll acknowledgement message indicating that said data
25 transmission device has data to send, wirelessly transmitting, from said data reception device to said data transmission device, a data request message;

(e) in response to receipt of said data request message, wirelessly transmitting, from said data
30 transmission device to said data reception device, a data message containing a plurality of data packets;

(f) in response to receipt of said data message at said data reception device, storing data contained in data packets of said data message, and storing
35 information representative of any data packets missing from said data message; and

(g) wirelessly transmitting from said data reception device to said data transmission device, a data acknowledgement message that includes said
40 information representative of any data packets missing from said data message.

2. The method according to claim 1, wherein step (g) comprises wirelessly transmitting from said data reception device to said data transmission device, a data acknowledgement message that requests said data
5 transmission device to transmit all packets except for specifically identified packets.

3. The method according to claim 1, wherein step (g) comprises wirelessly transmitting from said data reception device to said data transmission device, a data acknowledgement message that requests said data
5 transmission device to retransmit only specifically identified packets and fill the remainder of the data message with new packets.

4. The method according to claim 1, wherein step (g) comprises wirelessly transmitting from said data reception device to said data transmission device, a data acknowledgement message that requests said data transmission device to retransmit all packets of the last data message.

5. The method according to claim 1, further including the step of:

(h) subsequent to receipt of said data acknowledgement message, wirelessly transmitting, from said data transmission device to said data reception device, at least one further data message containing data packets missing from said data message transmitted in step (e).

6. The method according to claim 5, wherein said data acknowledgement message transmitted in step (g) includes information that indicates whether said further data message is to be immediately transmitted, and wherein step (h) comprises, in the absence of information indicating that said further data message is to be immediately transmitted, waiting until receipt of a further poll message and a further data request message before wirelessly transmitting, from said data transmission device to said data reception device, said further data message containing said data packets missing from said data message transmitted in step (e).

7. The method according to claim 5, wherein said data acknowledgement message transmitted in step (g) includes information that indicates whether said further data message is to be immediately transmitted, and
5 wherein step (h) comprises, in response to information indicating that said further data message is to be immediately transmitted, wirelessly transmitting, from said data transmission device to said data reception device, said further data message containing said data
10 packets missing from said data message transmitted in step (e).

8. The method according to claim 5, wherein step (f) comprises storing data contained in a respective group of data packets in an associated data buffer of a group storage section of a memory of said data reception
5 device, and storing said information representative of any data packets missing from said data message in a resend buffer of said group storage section of said memory of said data reception device.

9. The method according to claim 8, wherein step (g) comprises assembling said data acknowledgement message in accordance with the contents of said resend matrix of said group storage section of said memory of
5 said second transceiver device.

10. The method according to claim 2, wherein step (h) includes storing, in a resend packet buffer, those

data packets that were identified in said data acknowledgement message as missing from said data
5 message transmitted in step (e), and assembling said further data message for wireless transmission to said second transceiver device in accordance with the contents of said resend packet buffer.

11. A method of conducting wireless packetized digital data communications between a data sourcing site and a data reception site, geographically remote with respect to one another, by way of a relay therebetween
5 said method comprising the steps of:

(a) transmitting a group of data packets from said data sourcing site to said relay;

(b) transmitting from said relay to said data reception site those ones of said group of data packets
10 that have been received from said data sourcing site, and requesting said data sourcing site to resend any transmitted packet not received by said relay;

(c) arranging data packets received from said relay in a packet assembly store, and requesting said
15 relay to resend any transmitted packet not received by said data reception site.

12. The method according to claim 11, wherein step (b) comprises requesting said data sourcing site to resend any transmitted packet not received by said relay for a prescribed number of repeats, and wherein step (a)
5 comprises transmitting, as a group of data packets from

said data sourcing site to said relay, packets for which a resend has been requested in step (b), followed by new packets not previously sent.

13. The method according to claim 12, wherein step (c) comprises requesting said relay site to resend any transmitted packet not received by said data reception site for a prescribed number of repeats, and wherein
5 step (b) comprises transmitting, as a group of data packets from said relay to said data reception site, packets for which a resend has been requested in step (c), followed by new packets not previously sent by said relay.

14. A system for conducting wireless packetized digital data communications between a data sourcing site and a data reception site, geographically remote with respect to one another, by way of a relay therebetween
5 comprising:

a data sourcing site transmitter that is operative to transmit a group of data packets to said relay;

a relay transceiver that is operative to transmit from said relay to said data reception site those ones
10 of said group of data packets that have been received from said data sourcing site, and requesting said data sourcing site to resend any transmitted packet not received by said relay;

a data packet assembly store at said data reception
15 site, which is operative to sequentially order therein

data packets received from said relay, and a data reception site transceiver that is operative to request said relay to resend any transmitted packet not received by said data reception site.

15. The system according to claim 14, wherein said relay transceiver is operative to request said data sourcing site to resend any transmitted packet not received by said relay for a prescribed number of
5 repeats, and wherein said data sourcing site is operative to transmit, as a group of data packets from said data sourcing site to said relay, packets for which a resend has been requested, followed by new packets not previously sent.

16. The system according to claim 15, wherein said data reception site transceiver is operative to request said relay site to resend any transmitted packet not received by said data reception site for a prescribed
5 number of repeats, and wherein said relay is operative to transmit, as a group of data packets, packets for which a resend has been requested by said data reception site, followed by new packets not previously sent by said relay.

17. The system according to claim 14, wherein a respective transceiver is operative to conduct a prescribed number of retransmission attempts before declaring a packet effectively lost.

18. The system according to claim 14, wherein a respective transceiver is operative to conduct a time-out with respect to a retransmission attempt before declaring a packet effectively lost.